Aftermath

Vol. 12, Num. 1 Texas A&M University-Commerce Mathematics Department Newsletter Fall 1997

MAPLE Labs for Calculus Increase in Popularity

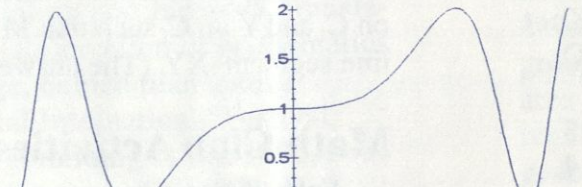
Now beginning their third year, our supplementary labs to accompany the calculus sequence has again nearly tripled in enrollment over the previous year. With 70 students diligently pounding away at our keyboards, our new computers are certainly getting broken in quickly.

MAPLE is a computer algebra system (CAS) that takes the drudgery out of the tedious algebraic manipulations that often obscure (by dint of shear mass) the intended point of an exercise. With *MAPLE* at their beck and call, students can now work through a dozen examples illustrating the Mean Value Theorem in the time they formerly would have spent on one. *MAPLE* plots graphs, solves equations, adds fractions, takes derivatives and integrals, and even serves as a programming language.

```
> f:=x->1+sin(x^3);
```

$$f := x \to 1 + \sin(x^3)$$

```
> plot(f(x),x=-2..2);
```




```
> a:=fsolve(f(x)=0,x=-1.5..-1);b:=fsolve(f(x)=0,x=1.5..2);
```

$$a := -1.162447352$$

$$b := 1.676539193$$

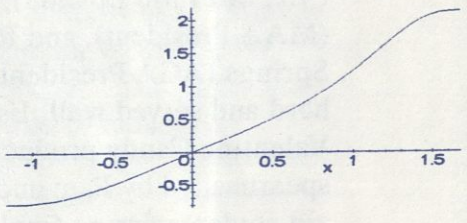
```
> F:=x->int(f(t),t=0..x);
```

$$F := x \to \int_0^x f(t)\,dt$$

```
> area:=evalf(F(b)-F(a));
```

$$area := 2.913125802$$

```
> plot({F(x),area/2},x=a..b);
```



Estimate the point of intersection to be about $x = 1.11$

```
> evalf(F(1.11)-area/2);
```

$$-.011690676$$

About 1% error.

Sue Smith Retires

After a distinguished eighteen year career at TAMU-Commerce, Sue Smith retired on January 31, 1997. She finished the last four years of that time as Secretary of the Mathematics Department, but had also worked in the Print Shop, the Department of Literature and Languages, and the Office of the Vice-President for Academic Affairs. During her service in our department, Sue received numerous honors. Among them were a Professional Achievement Award from the Faculty Senate in 1994 and the University Office Personnel Association (UOPA) Distinguished Member Award in 1995. She served as an officer in UOPA and also received UOPA scholarships. Sue was paid tribute at a dinner on February 14, 1997. She received gifts, a plaque and many kind words. Anyone who knew Sue quickly learned to appreciate her cheerful attitude, her dedication to her work, and her loyalty to the Mathematics Department. She is very much missed, but is enjoying some well-deserved time for herself.

Math Department Web Page

The mathematics department now has an extensive web page which is both informative and entertaining. It includes personal web pages of each of the faculty, information concerning classes, announcements and pictures of departmental activities. Look for us at *http://www.tamu-commerce.edu/coas/math*.

Texas Section MAA Meeting

The annual meeting of the Texas Section of the MAA was held on April 3-5, 1997 at Texas Lutheran University in Seguin and was attended by Stuart Anderson, Deej Heath, John Heath, Rick Kreminski, Warren Koepp, Italo Simonelli, and Heidi Staebler. Professor Patriarch Jack Lamb was also present. Graduate students Jeff Norris, Lane Parrish, Betsy Price, and Pam Webster also participated, as did undergraduates Dale Henderson and Ed Bowen.

For a second year Deej Heath, Warren Koepp, Italo Simonelli, and Heidi Staebler went as Texas Project NExT participants and were treated to special presentations and discussions aimed at supporting young university and college mathematics faculty.

Quite a number of our department's members gave presentations at this meeting, including four graduate students and one undergraduate student. Presenters and the titles of their talks are provided below:

Undergraduate Student Presentations:

Dale Henderson: "Metric Topologies on Fields of Characteristic >0," advised by Dr. Deej Heath

Graduate Student Presentations:

Lane Parrish: "Investigations Into Knot Theory," advised by Dr. Deej Heath

Elizabeth Price: "Solving a Scheduling Problem by Relating a Finite Geometry to Graph Theory," advised by Dr. Bill Aslan

Jeff Norris: "Kth-Degree Mandelbrot Sets," advised by Dr. Deej Heath

Pamela Webster: "A Presentation of the 17-gon as Constructed by Karl Friedrich Gauss," advised by Dr. Stuart Anderson

Faculty Presentations:

Deej Heath: "On Locally Thin Position"

Warren Koepp: "Some Problems and Results on the Derivations of Laurent Polynomials"

Rick Kreminski: "Estimating Infinite Series by Numerical Differentiation"

Heidi Staebler: "Ostebee & Zorn Calculus, Graphing Calculators, MAPLE, and the Internet at the University of Minnesota, Minneapolis"

Retired Faculty Presentations:

John F. Lamb, Jr.: "A Statistical Analysis of the Behavior of the Texas CASH 5 Lottery Numbers After 150 Drawings"

Putnam News

On Saturday, December 7, 1996, thirteen TAMU-C students participated in the 57th annual Putnam exam. This six hour long test has only 12 problems, yet to get 2 correct places the student in the upper seventh of the country. (A third of the participants nationally received a score of ZERO.) This was the fifth year in a row that we fielded a team of three, and as usual we had a positive team score. By late October we should have the 1997 team assembled.

Sample problem from the 1996 test (it can be solved using only trigonometry, and even less): Let C_1 and C_2 be circles whose centers are 10 units apart and whose radii are 1 and 3. Find, with proof, the locus of all points M for which there exist points X on C_1 and Y on C_2 such that M is the midpoint of the line segment XY. (The answer is a nice picture.)

Math Club Activities

Four of our members were able to attend the state MAA meeting at Texas Lutheran University in Seguin in April. They were Pamela Webster of Commerce (Pi Mu Epsilon President), Betsy Price of Savoy, Roger Kelley of Paris (Treasurer of the clubs), and Jeff Norris of Commerce. We were proud to have Pam and Jeff give talks at student sessions during the meeting. Other officers for the 1996-1997 year were Jen-Te Tseng of Commerce (V.P. of Pi Mu Epsilon), Martha Kuhl of Mt.Venon (MAA President), and Ronald Layton of Sulphur Springs (AGA President). All these people worked hard and served well. Especially notable were a Valentine Candy production and sales project spearheaded by Pam and Martha and a project to aid students during final exam week. The clubs were able to donate $350 to each of two scholarship funds; the Weldon "Bub" Taylor Scholarship and the Dennis P. Grantham Scholarship.

Please Tell Us About Yourself!

In an effort to provide our students with a job search network and ideas about career options and preparation, the TAMU-C Mathematics Department would like to compile some information from its alumni. What is your current job title? Who do you work for? What do you do? Which courses taken at TAMU-C (East Texas State University) were the most important in preparing you for your current job? What courses do you wish you had taken or do you wish had been available? What new careers are you aware of that a mathematics major or minor might wish to pursue? Would you mind if we gave your phone number, mailing address or e-mail address to a current student as an information resource? In addition to gathering the above information, we would love to just hear how you are doing and what is new and exciting in your life! Please send correspondence to:

Dr. Stuart Anderson Or
Stuart_Anderson@tamu-commerce.edu
Department of Mathematics
P.O. Box 3011
Texas A&M University-Commerce
Commerce, TX 75429-3011

Case in Point:
The following people would like to hear from old aquaintances:

Eric Aurand
ewa0001@jove.acs.unt.edu

Rick Kreminski briefly got to see ETSU alumni Ron Willimson and Eric Aurand, both grad students at UNT. Ron has since moved on to greener pastures; Eric is working on his dissertation there in graph theory/combinatorics.

Math Department Hires Administrative Secretary

Linda Culver joined the Department of Mathematics as their administrative secretary on February 24, 1997, after a brief retirement from PFS, a division of PepsiCo, Inc. She writes: "I had been a part of the PepsiCo family since 1987, starting out as an Administrative Assistant for the Controller and working my way up to Executive Assistant in the Domestic Operations and Logistics department. I am orginally form Euless, Texas but have spent some time in Germany, Virginia, and Georgia before returning to the Dallas area in 1985. I left the big city behind in 1995 and moved the the country, i.e. Emory, Texas. I enjoy volunteer work, reading, cross-stitch and riding the tractor. One day soon I hope to have the fence finished so the cows can come home." The Mathematics Department is very pleased to have Linda managing the front desk and keeping all the "bull" around here from breaking out of its fence!

Eleven Annual Homecoming Alumni Breakfast Scheduled

The eleventh annual Homecoming Mathematics Alumni Breakfast will be held at 9:00 a.m., Saturday, November 1, 1997 in the Bluebonnet room in the Sam Rayburn Memorial Student Center. Several scholarships will be awarded and alumni recognized. Please send your reservations in by October 29, 1997. The cost is $6.00 per person. If you cannot attend, please take time to fill out the return form so we can accurately update our alumni files. Note that retired Professor Jack Lamb will be present to sign copies of his book for those who are interested.

Name: _____

Address: _____

City, State & Zip: _____

Phone: ( )_____

Please Reserve _____ places at the Homecoming Alumni Breakfast on November 1, 1997 in the Bluebonnet Room of the MSC @ $6.00 each.

Enclosed: $_____

Math Department Scholarships

Each year, through the generosity of math department alumni and friends, we are able to award several scholarship to deserving mathematics majors. The following awards were given during the past year:

Lafferty Excellence Awards:
Jen-Te Tseng
Dinh Truong

Dennis Grantham Graduate Scholarship:
Jeff Norris

The recipients of scholarships to be presented at this year's Alumni Breakfast are:

Rachel Lafferty Scholarship:
Debra Vesey (freshman)

W. W. "Bub" Taylor Scholarship:
Andrew Spei (sophomore)

Cecil B. Wright Scholarship:
Anh Truong (junior)

John and Elaine Yznaga Scholarship:
Casey Click (freshman)

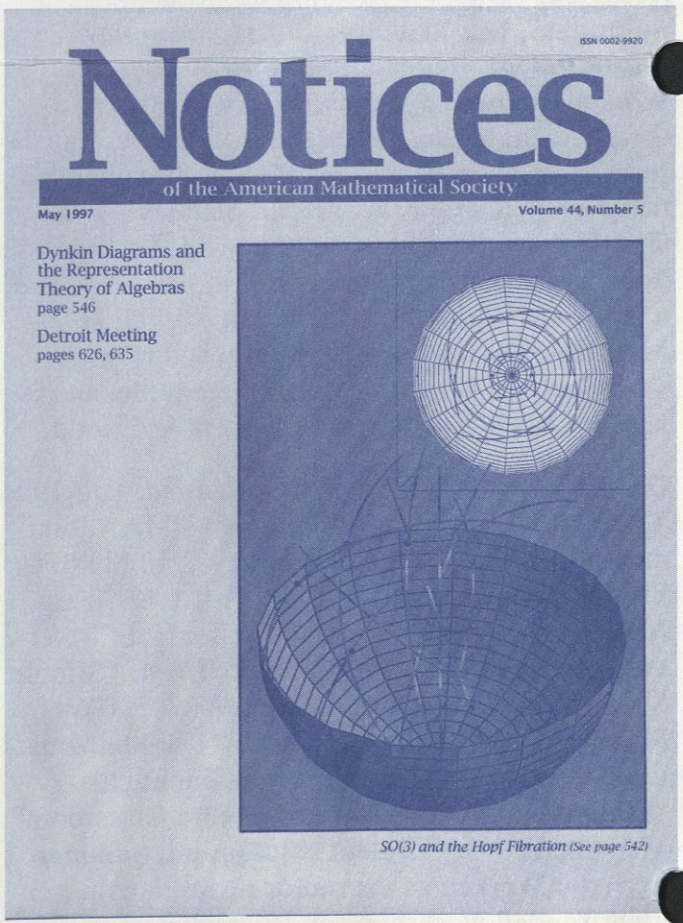
Lafferty Excellence Award:
William Black (junior)
Teri Speir (senior)
Jeremy Cunningham (senior)

Northeast Texas Scholarship:
Ginger Holt

Colloquia news

For 1996-1997, we had many colloquium speakers from the math department at TAMU-C, as well as the following speakers from out of town: Dr. Kerry Brock (from Austin College), Iris Fetta (from Clemson University), Dr. John Rickert, Dr. Charles Coppin and Dr. Ed Wilson (from the University of Dallas), Dr. Marge Bayer (from the University of Kansas), Dr. John Neuberger (from UNT), and Darrel Young from E-systems. In addition, faculty from the departments of chemistry and economics spoke, as well as speakers from the counseling center and the Mach III program on campus.

This semester (Fall 1997) we expect to have out of town speakers from UNT, Austin College, and Raytheon E-systems, although some of these may be history by the time the newsletter is mailed. The colloquia are at 3 p.m. on Wednesdays, and all are invited to attend. A schedule is posted at the departmental web site <http:www.tamu-commerce.edu/coas/math/index.html>.



Graphic representing the Hopf Fibration by Dr. Rick Kreminski

Math Club Activities

Dr. Stuart Anderson: ***Position held***: Secretary/ Treasurer for the Texas Section, MAA; ***Meetings Attended:*** National AMS/MAA joint meetings in San Diego on January 7-10 MathFest in Atlanta on July 31-August 3.

Dr. Bart Goddard: ***Position held:*** Editor for *Fibonacci Quarterly* Editor of problems and solutions for the *Mathematical Monthly*; ***Meetings Attended:*** Western Number Theory Conference at UNLV and visited the University of Calgary during the summer; ***Paper Published:*** "Quadratic Prime-Producing Polynomials"; *Journal of Mathematical Sciences*; ***Paper Accepted:*** "Polynomials of Quadratic type Producing Strings of Primes"; *Canadian Mathematical Bulletin*. ***Memberships:*** Sigma Xi.

Dr. Deej Heath: ***Meetings Attended:*** Fall 1996 Texas NExT meeting; ***Papers Published:*** "On Classification of Heegaard Splittings and Triangulations" and "Essential Tangle Decomposition from Thin Position of a Link," the latter with Tsuyoshi Kobayashi; *Pacific Journal*. ***Paper Accepted:*** "On Classification of Heegaard Splittings", *Osaka Journal of Mathematics*; ***Membership:*** Sigma Xi; ***Summer Activity:*** Worked at Tivoli Systems, IBM in Austin as a software engineering intern and Japanese Translator; ***Other Activities:*** (Re)creation of mathematics departmental web page, helped plan spring TAMU-C Multinational International Festival, Took a class on C programming in fall 1996, and a graduate literature class in spring 1997; ***Hobbies:*** Deej has enjoyed learning wood turning since January from a friend in Greenville, and is slowly coming to appreciate Bois d'Arc wood.

Dr. Warren Koepp: Meetings Attended: Fall 1996 Texas NExT meeting National AMS/MAA joint meetings in San Diego on January 7-10 MathFest in Atlanta on July 31-August 3 Fall 1996 Texas NExT meeting UW-Madison Centennial Conference during summer 1997; ***Talks Given:*** "Simple Subalgebras in the Witt Algebra W(n)"; UW-Madison Centennial Conference "The Mathematics of Juggling"; Sigma Xi after-dinner talk "Technology in the Abstract Algebra Classroom"; Mathematics Department colloquium; ***Summer Activity:*** Worked as instructor in an Eisenhower grant-funded workshop for 20 local elementary school teachers; ***Other Activities:*** Continued as Project NExT Fellow at the state and national levels; has become involved with NExT-related initiatives in the mathematical preparation of elementary school teachers.

Dr. Rick Kreminski: Position Held: Promoted to Associate Professor! President of the TAMU-C chapter of Sigma Xi; *Picture Published:* Cover graphic illustrating the Hopf Fibration on the May 1997 *Notices of the American Mathematical Society (see illustration page 4)*; ***Articles Published:*** "Visualizing the Hopf Fibration", *Mathematica in Education and Research* "Using Simpson's Rule to Approximate Sums of Infinite Series", *College Math Journal*; ***Articles Accepted:*** "Differentiating Among Convergent Series", *Mathematics Magazine,* "Graphs and Matrices in the Study of (Finite) Topological Spaces", *Missouri Journal of Mathematical Sciences*; ***Articles Submitted:*** "Fun Fractions?! You've Got to be Kidding!", *NCTM Mathematics Teacher* One of his fun fractions is 1,000,000/989,901; in decimal form, 1.010202030304040505060606 . . . (sort of like the Energizer bunny, it keeps going and going), "Estimating Logarithms in College and Linear Algebra", *International Journal of Mathematical Education in Science and Technology*; ***Talks Given:*** Spoke at the University of Dallas, the University of North Texas and TAMU-C; ***Other Activities:*** Taught one of his daughter Amelia's math classes last year, and plans to teach two or three this fall to her third grade class; Founded a group, now called the Texas Twistors, of Dallas-area mathematicians and physicists which meets regularly to discuss issues in twistor theory and general relativity (and eat burritos); Does some consulting work for the Hunt County Department of Corrections with Dr. Italo Simonelli and Dr. Randy McBroom (sociology); Developed a web campus calendar with Dale Henderson (a math major) it is the best place to find out what's happening at TAMU-C-*http://www.tamu-commerce.edu* under the heading Campus Events; ***Hobbies:*** Benjamin, his youngest child, just turned one, and likes to feed Cheerios to the ducks at Gee Lake during mornings when his mom, Anne, teaches a section of Math 131 as an adjunct.

Dr. Italo Simonelli: ***Meeting Attended:*** National Conference on Undergraduate Research April 24-27 Fall 1996 Texas NExT meeting; ***Talk Given:*** "Bonferroni Inequalities: Recent Advances"; National Conference on Undergraduate Research; ***Paper Submitted:*** "Multivariate Bonferroni Inequalities"; *Journal of Multivariate Analysis*;

Other Activities: Advised Dinh Truong (math major) who presented "Random Allocation of Particles into Urns" at the National Conference of Undergraduate Research.

Dr. Vance Underhill: ***Meeting Attended:*** Joint AMS/MAA meeting in San Diego in January.

Dr. Bill Aslan: ***Summer Activity:*** Taught workshops for elementary and secondary mathematics teachers which demonstrated the discovery approach and focused on problem solving, implementing new technology and teaching for understanding.

Mr. John Heath: ***Position Held:*** TAMU-C Faculty Senator Advisor of the mathematics department's clubs; MAA, Pi Mu Epsilon, and Alpha Gamma Alpha.

Mr. Charlie Jones: ***Position Held:*** Director of the Undergraduate Honors Program (3rd & final year); ***Meeting Attended:*** National Conference for Undergraduate Research held in Austin on April 24-27 with Dr. Italo Simonelli and 5 undergraduates; ***Other:*** He writes: "My greatest accomplishment was making it through another year."

Ms. Heidi Staebler: ***Meeting Attended:*** Fall 1996 Texas NExT meeting; ***Talk Presented:*** "Tiling, Topology and What You Wear"; Spring 1997 talk to the Math Clubs; ***Summer Activity:*** Worked as instructor in an Eisenhower grant-funded workshop for 20 local elementary school teachers; ***Other Activity:*** Facilitated TAMU-C mathematics department's spring 1997 role as an "adopter site" of the text: *CALCULUS CONCEPTS: An Informal Approach to the Mathematics of Change* for a FIPSE grant awarded to the Clemson Project.

Mathematics Department
Texas A&M University-Commerce
Commerce, Texas 75429-3011

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